

REMARKS

Applicant wishes to thank the Examiner for the courtesies extended to his attorney during the telephone interview of August 2004 to discuss her remarks in the outstanding Office Action. The apparent conflicting statements about the allowed claims, in regard to paragraph 6 of the Examiner's remarks, was cleared up, with claims 11-15, and 17-18 being allowed in the outstanding Office Action.

Allowed claims 11 and 13 are being amended to correct spelling errors. Allowed claim 11 is also being amended to amend the indefinite term "certain" to state - - short - -. Rejected claim 1 is also being amended to remove the indefinite term "certain". The standing 35 USC 112, second paragraph, rejection of claims 1-19 has now been overcome.

Claims 9 and 19 are being amended to recite - - polyamide - - instead of "polyaznide", and thereby correct a typographical error. Claim 3 is being amended to recite - - selected from the group of - - instead of "e.g.". Proper Markush language is now present in the claim. Claims 5, 6 and 7 are being amended to recite - - thermoplastic - - instead of "thermoplastics" and thereby correct a typographical error.

The Examiner has remarked that 7 is redundant to claim 1 in the recitation of the limitation of the: "with at least 10% by weight. While the 10% by weight language is present in both claim 1 and claim 7, the two claims are not redundant. In claim 1 the language is such that either one of the two thermoplastics can wet the fibres and that wetting thermoplastic is represented in the product with at least 10% by weight. In claim 7, the "10% by weight" limitation is narrowed to the first thermoplastics material.

Claim 1 is being extensively amended. Some language corresponding to allowed claim 11 has been added. For the following reasons, newly amended claim 1 is considered allowable. Claims 2-10 and 16 and 19, depending there from are also considered allowable.

With regard to the Hanley patent it should be noted that the "sizing agents" used by Hanley as described in column 6, table I are not comparable to the first thermoplastic material which mainly wets the fibres. Indeed, the "sizing agents" listed in table I comprise thermoplastic materials that wet the fibre. However, such "sizing agents" are commonly applied to the fibres in minor amounts of less than 1 wt.%. This is proven by the enclosed data sheets of manufacturers of fibres with a sizing agent coating. The relevant value that determines the portion of sizing agent on a coated fibre is "loss on ignition" in percent. If a fibre coated with sizing agent is subjected to an ignition test, the sizing agent will be destroyed and removed from the fibre, that is, the loss on ignition corresponds to the proportion of sizing agent on the originally coated fibres.

The loss on ignition values given for R099 P319 manufactured by Saint-Gobain Vetrotex are 0.6 wt.%. The respective values given by Owens Corning for their fibres with a silane-based size are 0.53 wt.% at minimum and 0.87 wt.% at maximum. See Exhibits "A" and "B" attached. Such commercially available glass fibres coated with sizing materials are commonly used in the state of the art of fibre-reinforced thermoplastic materials. Such fibres are also used for the manufacturing of the materials according to the Hanley patent (column 4, lines 27-30).

The final concentration of the sizing agent in the reinforced thermoplastic material according to Hanley has to be calculated based on the loss of ignition values given above and applying the proportion of sized fibres according to table II in column 6 of the Hanley patent. According to said table II the proportion of fibres in the thermoplastic material is, according to Hanley, 30 wt.%. Since the proportion of sizing agent on the coated fibres is about 1 wt.% at

maximum, the final concentration of the sizing agent in the fibre-reinforced thermoplastic material according to Hanley is 0.3 wt.%. That is, the sizing materials according to Hanley are present on the fibres in minor amounts to provide a thin sizing film, which leads to a final concentration of this sizing material in the reinforced fabrics of far below 10 wt.% which is the minimum amount claimed by the present invention. Therefore, the present invention is clearly novel over the prior art patent to Hanley and there is also no suggestion in Hanley to provide corresponding amounts of a wetting thermoplastic material.

The process according to Saito for the manufacturing of a long-fibre reinforced polymer alloy comprises the steps of blending a so-called "master batch" with a diluent (Saito: column 3, lines 27-31). For the preparation of the "master batch" a bundle of fibres is contacted with a molten polyamide resin and cut into pellets with a length of 3-30 mm subsequent to the solidification of the polyamide (Saito: column 4, lines 33-47). Accordingly, the fibre size in the pellets corresponds to the size of the pellets and shows a length of 3-30 mm. Finally, these pellets are then diluted with a polymer alloy comprising polyolefines and polyamides (Saito: column 4, lines 65-67 and claim 1).

The patent to Saito claims a long-fibre reinforced polymer material that is obtained by mixing pellets of a master batch and a polymer diluent, whereas the present invention is directed to a long-fibre reinforced thermoplastic material that is obtained by successively applying two thermoplastic materials onto a fibre skein. Therefore, not only the two methods differ clearly in the process steps, but also the resulting products, as the second thermoplastic material is applied to the pellets coated by the first material which are randomly distributed, so that the resulting products are clearly distinguished by the fibre orientation within individual parts. That is, the products obtained from the respective processes are neither the same nor

equivalent. Thus, the present invention is clearly novel over the patent to Saito and is also not rendered obvious by Saito.

In the method described by Guerrini in a first step a polymer powder is applied to parallel continuous fibres. In a second step the filament formed from these fibres provided with polymer powder is formed and subsequently coated with an outer sheath made of a second polymer. The third step provides calendaring of the coated filament in an oven, wherein the temperature increase provided by IR lamps is such that only the polymer powder becomes a fluid, so that it can flow between the fibres of the filament (Guerrini: claim 1a-d).

The drawback of the method according to Guerrini is that although different thermoplastic polymers are used, the temperature applied is below the melting point of one of the polymers. The drawback in particular is that there is no intermixing of the outer shaft polymer with the polymer powder, since the outer polymer remains in the solid state. Since, according to Guerrini, the two different polymers applied to the filament do not at least partially intermix, the bonding between these two is rather limited when compared to the bonding between the polymers in a material according to the present invention.

By increasing the temperature after applying both of the thermoplastic materials onto the fibres, the final product of the method according to the present invention shows more or less homogeneous intermixing of the two materials applied. The more or less homogeneous intermixing of the two materials provides a very strong bonding between the materials, wherein the strength of the bonding is due to an interlocking of the two materials into each other on the one hand, and, on the other hand, resulting from the thereby simultaneously achieved enlargement of the polymer surfaces that are in contact with each other. Thus, also

the "physico-chemical" bonding between the two materials is formed more tight than it is in materials in which the thermoplastic materials do not intermix.

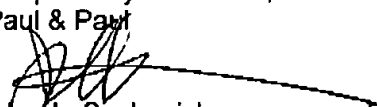
Furthermore, more or less homogeneous intermixing of the two polymers according to the invention provides new properties to the final product being not obtainable in materials with non-intermixed polymers (present application, page 3, third paragraph). Such useful property combinations are, for instance, good compressive strength of the one thermoplastic material being spread more or less homogeneously in the final product and homogeneously spread tensile strength of the other thermoplastic material (present application: paragraph bridging pages 2 and 3).

The patent to de Wit refers to claim 10 of the present invention only. Since it is now presumed that the claims 1 to 9 should be considered allowable on basis of this reply, the subject matter of de Wit should not have to be discussed with respect to dependent claim 10.

It is requested that the case be passed to issue with claims 1-19 as presented herein.

Respectfully submitted,
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